(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
1 April 2004 (01.04.2004)

PCT

(10) International Publication Number
WO 2004/027205 A3

(51) International Patent Classification[7]: E21B 43/10

(21) International Application Number:
PCT/US2003/029859

(22) International Filing Date:
22 September 2003 (22.09.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/412,542 20 September 2002 (20.09.2002) US

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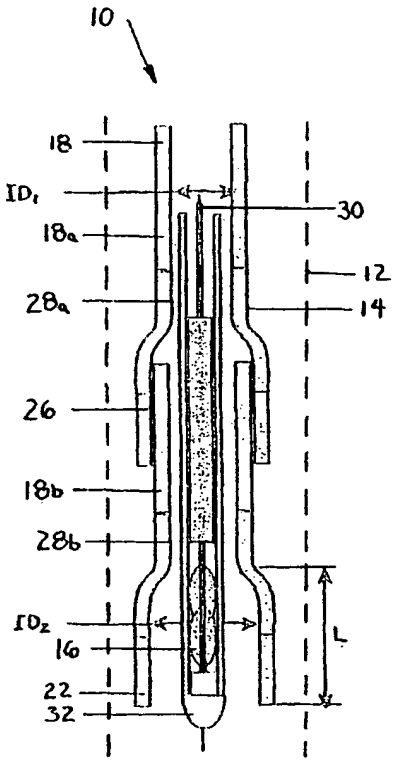
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM),

[Continued on next page]

(54) Title: MONO DIAMETER WELLBORE CASING



(57) Abstract: An apparatus for radially expanding and plastically deforming an expandable tubular members to form a mono diameter wellbore casing includes an adjustable expansion assembly having a first diameter for forming a bell portion of in each tubular member and a second diameter for forming a mono diameter portion that nests into the bell portion of the preceding tubular member.

WO 2004/027205 A3

European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR). OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declaration under Rule 4.17:
— *of inventorship (Rule 4.17(iv)) for US only*

Published:
— *with international search report*

(88) Date of publication of the international search report:
5 August 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US03/29859

A. CLASSIFICATION OF SUBJECT MATTER

IPC(7) : E21B 43/10
US CL : 166/380, 207

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
U.S. : 166/380, 207, 208, 209, 210, 211, 212, 213, 214, 215, 216, 217

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 6,085,838 A (VERCAEMER et al.) 11 July 2000 (11.07.00), figures 5-7.	1-40
A	US 4,420,866 A (MUELLER) 20 December 1983 (20.12.83), figure 4.	1-40

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search
04 February 2004 (04.02.2004)

Date of mailing of the international search report
21 MAY 2004

Name and mailing address of the ISA/US
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Form PCT/ISA/210 (second sheet) (July 1998)

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[Continued on next page]

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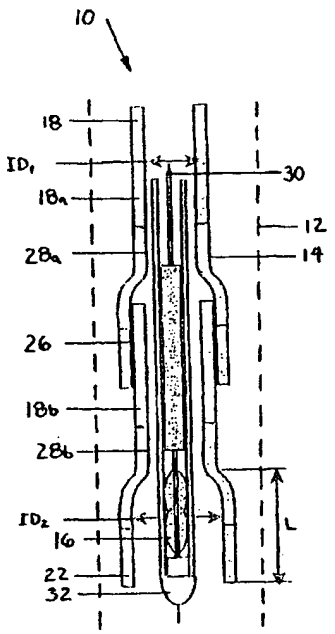

(57) Abstract: An apparatus for radially expanding and plastically deforming an expandable tubular members to form a mono diameter wellbore casing includes an adjustable expansion assembly having a first diameter for forming a bell portion of in each tubular member and a second diameter for forming a mono diameter portion that nests into the bell portion of the preceding tubular member.

WO 2004/027205 A3

— *with amended claims*

(88) Date of publication of the international search report:
5 August 2004

Date of publication of the amended claims:
23 September 2004

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

AMENDED CLAIMS

[received by the International Bureau on 16 July 2004 (16.07.04);
claims 1-40 replaced by amended claims;
claims 41-54 added as new claims; (18 pages)]

1. An apparatus for radially expanding and plastically deforming a portion of an expandable tubular member from an initial inside diameter to a desired inside diameter of a mono diameter section and another portion of the expandable tubular member to an inside diameter of a bell section, wherein the inside diameter of the bell section is greater than the inside diameter of the mono diameter section, comprising:

an upper tubular support member defining a first passage;

one or more cup seals coupled to the exterior surface of the upper tubular support member for sealing an interface between the upper tubular support member and the expandable tubular member;

an expansion cone assembly coupled to the upper tubular support member adjustable to one expansion diameter corresponding to the desired diameter of the bell section and adjustable to another expansion diameter corresponding to the desired diameter of the mono diameter section;

means for actuating the expansion cone assembly to adjust from the one diameter to the other diameter; and

an actuator for moving the expansion cone assembly through the expandable tubular member a desired distance with the expansion cone assembly adjusted to the desired inside diameter of the bell section and for moving the expansion cone assembly through the expandable tubular member for another distance with the expansion cone assembly adjusted to the desired inside diameter of the mono diameter section.

2. The apparatus of claim 1, wherein the expansion cone assembly comprises a one adjustable cone having an external surface adjustable to the inside diameter of the bell section; and wherein the external surface of the one adjustable cone is also adjustable to the diameter corresponding to the inside diameter of the mono diameter section.

3. The apparatus of claim 1, wherein the expansion cone assembly comprises:

a first adjustable cone having an external surface adjustable to the inside diameter of the bell section; and

a second adjustable cone having an external surface adjustable to the inside diameter corresponding to the desired diameter of the mono diameter section.

4. The apparatus of claim 1, wherein the expansion cone assembly comprises:
a first adjustable cone having an external surface adjustable to the diameter of the bell section and collapsible after expanding the bell section; and
a second cone having a fixed diameter corresponding to the desired diameter of the mono diameter section such that collapsing the first adjustable cone effectively adjusts an effective expansion diameter of the expansion cone assembly to the fixed diameter of the second cone.

5. The apparatus of claim 1, wherein the expansion cone assembly comprises:
an upper cam assembly coupled to the upper tubular support member comprising:
a tubular base coupled to the upper tubular support member, and
a plurality of cam arms extending from the tubular base in a downward longitudinal direction, each cam arm defining an inclined surface;
a plurality of upper expansion cone segments interleaved with the cam arms of the upper cam assembly and pivotally coupled to the tubular support member, and each upper expansion segment movable relative to the inclined surface of one of the plurality of cam arms to adjust the radial position of an eternal surface of the segment to adjust the diameter of the expansion cone assembly;
a lower tubular support member defining a second passage fluidicly coupled to the first passage releasably coupled to the upper tubular support member;
a lower cam assembly coupled to the lower tubular support member comprising:
a tubular base coupled to the lower tubular support member; and
a plurality of cam arms extending from the tubular base in an upward longitudinal direction, each cam arm defining an inclined surface that mates with the inclined surface of a corresponding one of the upper expansion cone segments;
wherein the cams arms of the upper cam assembly are interleaved with and overlap the cam arms of the lower cam assembly; and
a plurality of lower expansion cone segments interleaved with cam arms of the lower cam assembly, each lower expansion cone segment pivotally coupled to the lower tubular support member and mating with the inclined surface of a corresponding one of the cam arms of the

upper cam assembly and each lower expansion segment movable relative to the inclined surface of one of the plurality of cam arms to adjust the radial position of an eternal surface of the segment to adjust the diameter of the expansion cone assembly;

wherein the lower expansion cone segments interleave and overlap the upper expansion cone segments; and

wherein the upper and lower expansion cone segments each approximate an arcuate spherical external surface for plastically deforming and radially expanding the expandable tubular member.

6. An apparatus for radially expanding and plastically deforming an expandable tubular member, comprising:

a tubular support member;

a adjustable expansion cone assembly coupled to the tubular support member;

an expandable tubular member coupled to the adjustable expansion cone assembly;

means for displacing the adjustable expansion cone assembly relative to the expandable tubular member; and

means for adjusting the adjustable expansion cone assembly from one effective expansion diameter to another effective expansion diameter.

7. The apparatus of claim 6, wherein the tubular support member comprises an upper tubular support member comprising an internal flange and a lower tubular support member comprising an internal flange; wherein the adjustable expansion cone assembly comprises:

an upper cam assembly coupled to the upper tubular support member comprising:

a tubular base coupled to the upper support member;

a plurality of cam arms extending from the tubular base in a downward longitudinal direction, each cam arm defining an inclined surface; and

a plurality of upper expansion cone segments interleaved with the cam arms of the upper cam assembly and pivotally coupled to the internal flange of the upper tubular support member;

a lower cam assembly coupled to the lower tubular support member comprising:

a tubular base coupled to the lower tubular support member;

a plurality of cam arms extending from the tubular base in an upward longitudinal direction, each cam arm defining an inclined surface that

mates with the inclined surface of a corresponding one of the upper expansion cone segments;

wherein the cams arms of the upper cam assembly are interleaved with and overlap the cam arms of the lower cam assembly; and

a plurality of lower expansion cone segments interleaved with cam arms of the lower cam assembly, each lower expansion cone segment pivotally coupled to the internal flange of the lower tubular support member and mating with the inclined surface of a corresponding one of the cam arms of the upper cam assembly; and

wherein the apparatus further comprises:

means for releasably coupling the upper tubular support member to the lower tubular support member; and

means for limiting movement of the upper tubular support member relative to the lower tubular support member.

8. The apparatus of claim 6, further comprising:

means for pivoting the upper expansion cone segments; and

means for pivoting the lower expansion cone segments.

9. The apparatus of claim 6, further comprising:

means for pulling the adjustable expansion cone assembly through the expandable tubular member.

10. An adjustable expansion cone assembly, comprising:

an upper cam assembly comprising:

a tubular base;

a plurality of cam arms extending from the tubular base in a downward longitudinal direction, each cam arm defining an inclined surface; and

a plurality of upper expansion cone segments interleaved with the cam arms of the upper cam assembly;

a lower cam assembly comprising:

a tubular base;

a plurality of cam arms extending from the tubular base in an upward longitudinal direction, each cam arm defining an inclined surface that

mates with the inclined surface of a corresponding one of the upper expansion cone segments;

wherein the cams arms of the upper cam assembly are interleaved with and overlap the cam arms of the lower cam assembly; and

a plurality of lower expansion cone segments interleaved with cam arms of the lower cam assembly, each lower expansion cone segment mating with the inclined surface of a corresponding one of the cam arms of the upper cam assembly;

means for moving the upper cam assembly toward or away from the lower expansion cone segments to adjust the radial position of an external surface of the lower expansion cone segments; and

means for moving the lower cam assembly toward or away from the upper expansion cone segments to adjust the radial position of an external surface of the upper expansion cone segments.

11. The apparatus of claim 10, wherein the upper and lower expansion cone segments together approximate an arcuate spherical external surface.

12. The apparatus of claim 10, wherein each upper expansion cone segment comprises:

an inner portion defining an arcuate cylindrical upper surface and arcuate cylindrical lower surfaces;

an intermediate portion defining arcuate cylindrical and spherical upper surfaces and an arcuate conical lower surface; and

an outer portion defining arcuate cylindrical upper and lower surfaces; and

wherein each lower expansion cone segment comprises:

an inner portion defining an arcuate cylindrical upper surface and arcuate cylindrical lower surfaces;

an intermediate portion defining arcuate cylindrical and spherical upper surfaces and an arcuate conical lower surface; and

an outer portion defining arcuate cylindrical upper and lower surfaces.

13. The apparatus of claim 12, wherein each upper expansion cone segment is tapered in the longitudinal direction from the intermediate portion to the outer portion; and wherein

each lower expansion cone segment is tapered in the longitudinal direction from the intermediate portion to the outer portion.

14. An apparatus for radially expanding and plastically deforming a portion of an expandable tubular member from an initial inside diameter to a desired inside diameter of a mono diameter section and another portion of the expandable tubular member to a desired inside diameter of a bell section, wherein the inside diameter of the bell section is greater than the inside diameter of the mono diameter section, comprising:

an upper tubular support member defining a first passage;

one or more cup seals coupled to the exterior surface of the upper tubular support member for sealing an interface between the upper tubular support member and the expandable tubular member;

an expansion assembly coupled to the upper tubular support member adjustable to one expansion diameter corresponding to the desired inside diameter of the bell section and adjustable to another expansion diameter corresponding to the desired inside diameter of the mono diameter section;

means for actuating the expansion assembly to adjust from the one diameter to the other diameter; and

an actuator for moving the expansion assembly through the expandable tubular member a desired distance with the expansion assembly adjusted to the inside diameter of the bell section and for moving the expansion assembly through the expandable tubular member for another distance with the expansion assembly adjusted to the desired diameter of the mono diameter section.

15. The apparatus of claim 14, wherein the expansion assembly comprises a expansion cone device

16. The apparatus of claim 14, wherein the expansion assembly comprises a rotary expansion device.

17. The apparatus of claim 14, wherein the expansion assembly comprises compliant expansion device.

18. The apparatus of claim 14, wherein the expansion assembly comprises a hydroforming expansion device.

19. The apparatus of claim 14, wherein the expansion assembly comprises an adjustable expander device adjustable to the inside diameter of the bell portion of the expandable tubular member; and wherein the one adjustable expander device is also adjustable to the diameter corresponding to the desired inside diameter of the mono diameter wellbore casing.

20. The apparatus of claim 19, wherein the adjustable expander device comprises an adjustable expansion cone device

21. The apparatus of claim 19, wherein the adjustable expander device comprises an adjustable rotary expansion device.

22. The apparatus of claim 19, wherein the adjustable expander device comprises an adjustable compliant expansion device.

23. The apparatus of claim 19, wherein the adjustable expander device comprises an adjustable hydroforming expansion device.

25. The apparatus of claim 14, wherein the expansion assembly comprises a first adjustable expander device adjustable to the inside diameter of the bell section of the expandable tubular member; and a second adjustable expander device adjustable to the inside diameter corresponding to the desired diameter of the mono diameter section.

26. The apparatus of claim 14, wherein the expansion assembly comprises:

a first adjustable expander device adjustable to the desired inside diameter of the bell section of the expandable tubular member and collapsible after expanding the bell section; and

a second expander device having a fixed diameter corresponding to the desired inside diameter of the mono diameter section such that collapsing the first adjustable expander device effectively adjusts the effective expansion diameter to the fixed diameter of the second expander device.

27. A method of forming a mono diameter casing in a wellbore, comprising:

supporting a first expandable tubular member in the wellbore using a tubular support member and an adjustable expansion assembly having a first diameter smaller than the inside diameter of the expandable tubular member;

injecting a fluidic material into the tubular support member;

sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

displacing the adjustable expansion assembly relative to the expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

adjusting the effective expansion diameter of the adjustable expansion assembly to a second diameter larger than the inside diameter of the expandable tubular member when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

moving the adjustable expansion assembly having the second diameter a predetermined distance into the expandable tubular member to radially expand and plastically deform a first portion of the expandable tubular member;

activating the effective expansion diameter of the adjustable expansion assembly to adjust to a second diameter smaller than the first effective expansion diameter; and

moving the adjustable expansion assembly through the expandable tubular member when the adjustable expansion assembly is adjusted to the third diameter, to thereby radially expand and plastically deform the remaining portion of the expandable tubular member.

28. The method of forming a mono diameter wellbore casing as in claim 27 further comprising:

supporting a second expandable tubular member in the wellbore using a tubular

support member and an adjustable expansion assembly having a first diameter smaller than the inside diameter of the expandable tubular member;

positioning the second expandable tubular member in the expanded first expandable tubular member with the first portion thereof overlapping the second expandable tubular member;

injecting a fluidic material into the tubular support member;

sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

displacing the adjustable expansion assembly relative to the second expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

adjusting the effective expansion diameter of the adjustable expansion assembly to the second diameter when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

moving the adjustable expansion assembly having the second diameter a predetermined distance into the second expandable tubular member to radially expand and plastically deform a first portion of the second expandable tubular member below the first portion of the first expandable tubular member;

activating the effective expansion diameter of the adjustable expansion assembly to adjust to the second diameter; and

moving the adjustable expansion assembly through the second expandable tubular member and past the portion overlapping with the first expandable tubular member when the adjustable expansion assembly is adjusted to the third diameter, and to thereby radially expand and plastically deform a second portion of the second expandable tubular member to the same diameter as the expanded remaining portion of the first expandable tubular member.

29. The method of claim 27, wherein the adjustable expansion assembly comprises an adjustable expansion cone device

30. The apparatus of claim 27, wherein the adjustable expansion assembly comprises an adjustable a rotary expansion device.

31. The method of claim 27, wherein the adjustable expansion assembly comprises an adjustable compliant expansion device.

32. The method of claim 27, wherein the adjustable expansion assembly comprises an adjustable hydroforming expansion device.

33. A method of forming a casing in a wellbore, comprising:
inserting an expandable tubular member into the wellbore
radially expanding and plastically deforming a lower portion of the expandable tubular member to a first inside diameter; and
radially expanding and plastically deforming an upper portion of the expandable tubular member to a second inside diameter, wherein the first inside diameter is larger than the second inside diameter.

34. The method of claim 33 further comprising:
inserting a second expandable tubular member, into the expanded expandable tubular member so that a top portion of the second expandable tubular member is overlapped by the expanded lower portion of the expanded expandable tubular member; and
expanding the top portion of the second expandable tubular member to the second diameter so that the top portion of the second expandable tubular member is expanded radially outward in the expanded lower portion of the expanded expandable tubular member.

35. The method of claim 33, wherein expanding the lower and upper portions of the expandable tubular members comprises expanding using an expansion cone device.

36. The method of claim 33, wherein expanding the lower and upper portions of the expandable tubular members comprises expanding using a rotary expansion device.

37. The method of claim 33, wherein expanding the lower and upper portions of the

expandable tubular members comprises expanding using a compliant expansion device.

38. The method of claim 33, wherein expanding the lower and upper portions of the expandable tubular members comprises expanding using a hydroforming expansion device.

39. A method of forming a mono diameter casing in a wellbore, comprising:

supporting a first expandable tubular member in the wellbore using a tubular support member and an adjustable expansion cone assembly having a first diameter smaller than the inside diameter of the expandable tubular member;

injecting a fluidic material into the tubular support member;

sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

displacing the adjustable expansion cone assembly relative to the expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

adjusting the effective expansion diameter of the adjustable expansion cone assembly to a second diameter larger than the inside diameter of the expandable tubular member when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

moving the adjustable expansion cone assembly having the second diameter a predetermined distance into the expandable tubular member to radially expand and plastically deform a first portion of the expandable tubular member;

activating the effective expansion diameter of the adjustable expansion cone assembly to adjust to a second diameter smaller than the first effective expansion diameter; and

moving the adjustable expansion cone assembly through the expandable tubular member when the adjustable expansion cone assembly is adjusted to the third diameter, to thereby radially expand and plastically deform the remaining portion of the expandable tubular member.

40. The method of forming a mono diameter wellbore casing as in claim 39 further comprising:

supporting a second expandable tubular member in the wellbore using a tubular support member and an adjustable expansion cone assembly having a first diameter smaller than the inside diameter of the expandable tubular member;

positioning the second expandable tubular member in the expanded first expandable tubular member with the first portion thereof overlapping the second expandable tubular member;

injecting a fluidic material into the tubular support member;

sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

displacing the adjustable expansion cone assembly relative to the second expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

adjusting the effective expansion diameter of the adjustable expansion cone assembly to the second diameter when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

moving the adjustable expansion cone assembly having the second diameter a predetermined distance into the second expandable tubular member to radially expand and plastically deform a first portion of the second expandable tubular member below the first portion of the first expandable tubular member;

activating the effective expansion diameter of the adjustable expansion cone assembly to adjust to the second diameter; and

moving the adjustable expansion cone assembly through the second expandable tubular member and past the portion overlapping with the first expandable tubular member when the adjustable expansion cone assembly is adjusted to the third diameter and to thereby radially expand and plastically deform a second portion of the second expandable tubular member to the same

diameter as the expanded remaining portion of the first expandable tubular member.

41. A system for forming a mono diameter casing in a wellbore, comprising:

means for supporting a first expandable tubular member in the wellbore using a tubular support member and an adjustable expansion means having a first diameter smaller than the inside diameter of the expandable tubular member;

means for injecting a fluidic material into the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

means for displacing the adjustable expansion means relative to the expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

means for adjusting an effective expansion diameter of the adjustable expansion means to a second diameter larger than the inside diameter of the expandable tubular member when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

means for moving the adjustable expansion means having the second diameter a predetermined distance into the expandable tubular member to radially expand and plastically deform a first portion of the expandable tubular member;

means for activating the effective expansion diameter of the adjustable expansion means to adjust to a second diameter smaller than the first effective expansion diameter; and

means for moving the adjustable expansion means through the expandable tubular member when the adjustable expansion means is adjusted to the third diameter, to thereby radially expand and plastically deform the remaining portion of the expandable tubular member.

42. The system of claim 41, further comprising:

means for supporting a second expandable tubular member in the wellbore using a tubular support member and an adjustable expansion means having a first diameter smaller than the inside diameter of the expandable tubular member;

means for positioning the second expandable tubular member in the expanded first expandable tubular member with the first portion thereof overlapping the second expandable tubular member;

means for injecting a fluidic material into the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

means for displacing the adjustable expansion means relative to the second expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

means for adjusting the effective expansion diameter of the adjustable expansion means to the second diameter when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

means for moving the adjustable expansion means having the second diameter a predetermined distance into the second expandable tubular member to radially expand and plastically deform a first portion of the second expandable tubular member below the first portion of the first expandable tubular member;

means for activating the effective expansion diameter of the adjustable expansion means to adjust to the second diameter; and

means for moving the adjustable expansion means through the second expandable tubular member and past the portion overlapping with the first expandable tubular member when the adjustable expansion assembly is adjusted to the third diameter, and to thereby radially expand and plastically deform a second portion of the second expandable tubular member to the same diameter as the expanded remaining portion of the first expandable tubular member.

43. The system of claim 41, wherein the adjustable expansion means comprises an adjustable expansion cone means.

44. The system of claim 41, wherein the adjustable expansion means comprises an adjustable rotary expansion means.

45. The system of claim 41, wherein the adjustable expansion means comprises an adjustable compliant expansion means.

46. The system of claim 41, wherein the adjustable expansion means comprises an adjustable hydroforming expansion means.

47. A system for forming a casing in a wellbore, comprising:
means for inserting an expandable tubular member into the wellbore
means for radially expanding and plastically deforming a lower portion of the expandable tubular member to a first inside diameter; and
means for radially expanding and plastically deforming an upper portion of the expandable tubular member to a second inside diameter, wherein the first inside diameter is larger than the second inside diameter.

48. The system of claim 47, further comprising:
means for inserting a second expandable tubular member into the expanded expandable tubular member so that a top portion of the second expandable tubular member is overlapped by the expanded lower portion of the expanded expandable tubular member; and
means for expanding the top portion of the second expandable tubular member to the second diameter so that the top portion of the second expandable tubular member is expanded radially outward in the expanded lower portion of the expanded expandable tubular member.

49. The system of claim 47, wherein means for expanding the lower and upper portions of the expandable tubular members comprises expanding using an expansion cone means.

50. The system of claim 47, wherein means for expanding the lower and upper portions of the expandable tubular members comprises rotary expansion means.

51. The system of claim 47, wherein means for expanding the lower and upper portions of the expandable tubular members comprises compliant expansion means.

52. The system of claim 47, wherein means for expanding the lower and upper portions of the expandable tubular members comprises hydroforming expansion means.

53. A system for forming a mono diameter casing in a wellbore, comprising:

means for supporting a first expandable tubular member in the wellbore using a tubular support member and an adjustable expansion cone means having a first diameter smaller than the inside diameter of the expandable tubular member;

means for injecting a fluidic material into the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

means for displacing the adjustable expansion cone means relative to the expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

means for adjusting the effective expansion diameter of the adjustable expansion cone means to a second diameter larger than the inside diameter of the expandable tubular member when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

means for moving the adjustable expansion cone means having the second diameter a predetermined distance into the expandable tubular member to radially expand and plastically deform a first portion of the expandable tubular member;

means for activating the effective expansion diameter of the adjustable expansion cone means to adjust to a second diameter smaller than the first effective expansion diameter; and

means for moving the adjustable expansion cone means through the expandable tubular member when the adjustable expansion cone means is adjusted to the third diameter, to thereby radially expand and plastically deform the remaining portion of the expandable tubular member.

54. The system of claim 53, further comprising:

means for supporting a second expandable tubular member in the wellbore using a tubular support member and an adjustable expansion cone means having a first diameter smaller than the inside diameter of the expandable tubular member;

means for positioning the second expandable tubular member in the expanded first expandable tubular member with the first portion thereof overlapping the second expandable tubular member;

means for injecting a fluidic material into the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a first interior portion of the tubular support member;

means for displacing the adjustable expansion cone means relative to the second expandable tubular member and into the wellbore when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the first interior portion of the tubular support member;

means for sensing the operating pressure of the injected fluidic material within a second interior portion of the tubular support member;

means for adjusting the effective expansion diameter of the adjustable expansion cone means to the second diameter when the sensed operating pressure of the injected fluidic material exceeds a predetermined level within the second interior portion of the tubular support member;

means for moving the adjustable expansion cone means having the second diameter a predetermined distance into the second expandable tubular member to radially expand and plastically deform a first portion of the second expandable tubular member below the first portion of the first expandable tubular member;

means for activating the effective expansion diameter of the adjustable expansion cone means to adjust to the second diameter; and

means for moving the adjustable expansion cone means through the second expandable tubular member and past the portion overlapping with the first expandable tubular member when the adjustable expansion cone assembly is adjusted to the third diameter, and to thereby radially expand and plastically deform a second portion of the second expandable tubular member to the same diameter as the expanded remaining portion of the first expandable tubular member.